

does not specifically disclose that the amorphous silicon film is crystallized using nickel for promoting crystallization of silicon in a direction parallel to the surface of the substrate. Furthermore, the Official Action admits that Oka does not teach to purposely leave any areas amorphous. Liu et al. are cited as disclosing forming amorphous silicon channel pixel TFTs and polysilicon channel driver (peripheral) TFTs on Corning 7059 substrates by forming a thin layer of catalyst material, such as Ni, in contact with the peripheral regions and subsequently growing 30-40 micron polysilicon regions at a temperature of 550 °C, while other regions where catalyst was not introduced remained amorphous.

The Applicants respectfully disagree with the Official Action and reconsideration of the rejection is requested. First, neither Oka or Liu et al. disclose a direction of crystal growth, and more specifically do not specifically disclose crystal growth in a direction parallel to the surface of the substrate, wherein another region of the silicon film remains amorphous. In *In re Dillon*, 16 U.S.P.Q.2d 1897 (1990), the full Court of Appeals for the Federal Circuit held that in making an obviousness rejection, the Patent Office must make a prima facie case of obviousness, including both (1) a showing of structural similarity between one or more prior art references and the claimed invention, and (2) some specific motivation in the prior art references for combining the references in the manner asserted. Since neither Oka or Liu et al. appear to disclose the parallel crystal growth, Applicants respectfully submit that there has not been a showing of structural similarity between the prior art references and the claimed invention.

Furthermore, for purposes of argument only, even if Oka could be interpreted as disclosing crystal growth in a direction parallel to the surface

of the substrate, it appears that Liu et al. disclose crystal growth in a direction perpendicular to the surface of the substrate. Therefore, there would be no motivation to use the crystal growth teachings of Oka in conjunction with the teachings of Liu et al. to leave regions of the silicon film amorphous. The incompatible teaches of these references is further illustrated by the fact that Liu et al. teach that a thin film of the catalyst material is deposited in a pattern on the amorphous silicon so that only the amorphous silicon deposited beneath the deposited pattern is crystallized during annealing, which is inconsistent with a crystal growth parallel to the surface of the substrate since a parallel crystal growth near the edges of the deposited catalyst would extend into an adjacent region not beneath the deposited catalyst. Therefore, Liu et al. would necessary have to grow crystals in a direction perpendicular to the substrate in order to ensure that only the area beneath the deposited catalyst is crystallized, wherein such selective crystallization is the main purpose of Liu et al. Hence, the Applicants believe that the combination of Oka and Liu et al. do not disclose that an amorphous silicon film is crystallized and grown using a metal element for promoting crystallization of silicon in a direction parallel to the surface of the a substrate and in another region in the silicon film which remains amorphous. Further, for the reasons discussed above, Applicants do not believe that there is proper motivation to combine these references, and reconsideration is respectfully requested.

The Official Action rejects claims 9-10 as obvious over Oka in view of Liu et al. and further in view of U.S. Patent 5,278,093 to Yonehara or U.S. Patent No. 4,309,224 to Shibata et al. The Official Action admits that Oka and Liu et al. do not teach irradiating the polysilicon after thermal recrystallization, but asserts that Yonehara and Shibata teach irradiating the

polysilicon after a thermal crystallization to improve its properties, such as mobility. Since claims 9-10 ultimately depend upon claim 3, Applicants respectfully traverse this rejection for the same reasons set forth above that one skilled in the art would not be motivated to combine the above references to yield the present invention. Reconsideration is requested.

FORMALITIES

The Official Action rejects claims 21 under 35 U.S.C. § 112, second paragraph, as being indefinite, wherein claim 20 was previously amended to overcome the §112 rejection, while claim 21, which was rejected in Paper No. 5 for the same reason as claim 20, was not amended. Therefore, claim 21 has been amended as shown above to incorporate the same changes as previously amended claim 20. Reconsideration is requested in view of the above amendment.

CONCLUSION

In each case, the pending rejections should be reconsidered in view of the amendments and remarks herein. Applicants believe that this case is in good condition for allowance, and a Notice of Allowance is earnestly solicited.

If a telephone or further personal conference would be helpful, the Examiner is invited to call the undersigned, who will cooperate in any appropriate manner to advance prosecution.

Respectfully submitted,



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